

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today
(1) was not written for publication in a law journal and
(2) is not binding precedent of the Board.

Paper No. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARK J. BRADY,
BELAYNEH W. MILLION and JOHN T. STRAND

Appeal No. 1996-2480
Application 08/163,825¹

HEARD: September 13, 1999

Before JERRY SMITH, FLEMING and DIXON, ***Administrative Patent Judges.***

¹ Application for patent filed December 8, 1993.

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FLEMING, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1 through 16, 19 through 32 and 34 through 53.

Claims 17, 18 and 33 are objected to as being dependent on rejected base claims.

The invention is directed to a classification type neural network that performs piecewise linear separation along the entire input space. On page 26 of the specification, Appellants disclose the architecture of the facet classification neural network of the invention by referring to figure 10. In particular, Appellants disclose that figure 10 shows a multilayer neural network having input layer 162, two layers of nodes (difference nodes 164 and perceptron nodes 166) and output layer 168. Input layer 162 receives n-dimensional input vectors representing information to be classified by neural network 160. Difference nodes 164 are nodes found in a

domain layer of the neural network. The function of the difference nodes is to partition the input space by defining the domain of each linear separation, or each facet. In particular, the difference nodes 164 transform the input vector to the localized domain defined by the difference nodes 164. Minimum node 170 identifies a

transforming difference node from the difference nodes 170. The transforming difference node is the difference node defining the vornoi cell in which the input vector to be classified lies. Perceptron layer 166 comprises a plurality of perceptrons, each perceptron assigned to a particular domain. Each perceptron takes as its input the difference vector output from its corresponding difference node. The output layer 168 receives the output from the perceptron node 166 and outputs a class designator for the input vector.

Independent claim 1 is reproduced as follows:

1. A classification neural network for classifying input patterns, said classification neural network comprising:
an input node for receiving said input patterns;

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a plurality of nodes connected to said input node for transforming said input patterns to localized domains defined by each node;

a minimum node connected to said plurality of nodes for identifying a transforming node from said plurality of nodes;

a plurality of perceptron nodes, each said perceptron node connected to a corresponding node from said plurality of nodes for producing class designators, wherein said transforming node transmits a signal to its corresponding perceptron node for producing a class designator; and

an output node connected to said plurality of perceptron nodes for receiving said class designators from said plurality of perceptron nodes.

The Examiner relies on the following references:

Weingard	5,179,596	Jan. 12, 1993
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Lu, Shin-yee, "Pattern Classification Using Self-Organizing Feature Maps," **International Joint Conference on Neural Networks**, vol. 1 (June 17-21, 1990), 471-80.

Claims 1 through 16, 19 through 32 and 34 through 53 stand rejected under 35 U.S.C. § 103 as being unpatentable over Weingard in view of Lu.

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Rather than reiterate the argument of Appellants and the Examiner, reference is made to the brief and answer for the respective details thereof.

OPINION

We will not sustain the rejection of claims 1 through 16, 19 through 32 and 34 through 53 under 35 U.S.C. § 103.

The Examiner has failed to set forth a ***prima facie*** case. It is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the express teachings or suggestions found in the prior art, or by implications contained in such teachings or suggestions. ***In re Sernaker***, 702 F.2d 989, 995, 217 USPQ 1, 6

(Fed. Cir. 1983). "Additionally, when determining obviousness,

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the claimed invention should be considered as a whole; there is no legally recognizable 'heart' of the invention." **Para-Ordinance Mfg. v. SGS Importers Int'l, Inc.**, 73 F.3d 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995), **cert. denied**, 519 U.S. 822 (1996) **citing W. L. Gore & Assoc., Inc. v. Garlock, Inc.**, 721 F.2d 1540, 1548, 220 USPQ 303, 309 (Fed. Cir. 1983), **cert. denied**, 469 U.S. 851 (1984).

On pages 10 through 12 of the brief, Appellants argue that neither Weingard nor Lu teaches or suggests a plurality of perceptron nodes, each perceptron node connected to a corresponding node from said plurality of nodes for producing class designators, wherein said transforming node transmits a signal to its corresponding perceptron node for producing a class designator as recited in Appellants' claim 1. Appellants argue that the perceptron node is a term known in the art and is defined in the **"Background of the Invention"** found in Appellants' specification. Appellants argue that this definition must be given weight when the Examiner considers the rejection.

Appellants argue that neither reference teaches a perceptron node as defined by Appellants' specification.

On page 5 of the answer, the Examiner responds to the above Appellants' argument. In particular, the Examiner argues that the perceptron node as described in the "**Background of the Invention**" is not stated in the claims and, therefore, is not relevant to whether the reference teaches this limitation or not. Our reviewing court states in **In re Zletz**, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) that "claims must be interpreted as broadly as their terms reasonably allow." Moreover, when interpreting a claim, words of the claim are generally given their ordinary and accustomed meaning, unless it appears from the specification or the file history that they were used differently by the inventor. **Carroll Touch, Inc. v. Electro Mechanical Sys., Inc.**, 15 F.3d 1573, 1577, 27 USPQ2d 1836, 1840 (Fed. Cir. 1993). Although an inventor is indeed free to define the specific terms used to describe his or her invention, this must be done with reasonable clarity, deliberateness, and

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precision. *In re Paulsen*, 30 F.2d 1475, 1480, 31 USPQ 1671, 1674 (Fed. Cir. 1994).

On pages 3 through 5 of Appellants' specification, Appellants define a perceptron node as recognized in the art. In particular, Appellants point to Frank Rosenblatt,

Principles

of Neurodynamics, New York, Spartan Books (1959), U.S. Patent No. 3,287,649 to Rosenblatt, and Marvin Minsky and Seymour Papert, MA, MIT Press (1969) as evidence of the special meaning of perceptron nodes. In particular, Appellants define a perceptron node as a node that decides whether an input belongs to one of two classes. Appellants disclose that a perceptron separates all points in class A from those in class B and in a two dimensional case is represented generally mathematically by equation 2 disclosed on page 5.

From Appellants' disclosure, we find that the term "perceptron" has a special meaning in the art as defined in Appellants' specification on pages 3 through 5. Therefore, when interpreting the claim language, we are required to give the term "perceptron" this defined meaning as per the specific

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terms set forth on pages 3 through 5 of Appellants' specification.

We note that all of Appellants' claims recite the limitation of a perceptron node. We also note that the Examiner

has failed to address this limitation as it is defined in Appellants' specification. Upon our review of Weingard and Lu, we fail to find that either of these references teaches this limitation. Therefore, we will not sustain the Examiner's

rejection of claims 1 through 16, 19 through 32 and 34 through 53 as being unpatentable under 35 U.S.C. § 103 over Weingard in view of Lu.

We have not sustained the rejection of the claims under 35 U.S.C. § 103. Accordingly, the Examiner's decision is reversed.

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37 CFR § 1.196(b)

A new ground of rejection of claims 50 through 53 under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter which the Appellants regard as their invention is entered under 37 CFR § 1.196(b). Claims 50 through 53 depend on claim 49. Claim 49 sets forth a method of producing weight vectors and modifying a size of a neural network. However, claims 50 through 53 are setting forth a classification neural network according to claim 49. We find that claims 50 through 53 fail to particularly

point out and distinctly claim the Appellants' invention under 35 U.S.C. § 112, second paragraph.

This decision contains a new ground of rejection pursuant to 37 CFR § 1.196(b) (amended effective Dec. 1, 1997, by final rule notice, 62 Fed. Reg. 53,131, 53,197 (Oct. 10, 1997)),

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1203 Off. Gaz. Pat. and Trademark Office 63,122 (Oct. 21, 1997)). 37 CFR § 1.196(b) provides that "[a] new ground of rejection shall not be considered final for purposes of judicial review."

37 CFR § 1.196(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of proceedings (37 CFR § 1.197(c)) as to the rejected claims:

(1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner. . . .

(2) Request that the application be reheard under § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record. . . .

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No time period for taking any subsequent action in
con- nection with this appeal may be extended under 37 CFR §
1.136(a).

REVERSED 37 CFR § 1.196(b)

	JERRY SMITH)	
	Administrative Patent Judge)	
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)	
)	BOARD OF
PATENT)	
	MICHAEL R. FLEMING)	APPEALS AND
	Administrative Patent Judge)	
INTERFERENCES)	
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	JOSEPH L. DIXON)	
	Administrative Patent Judge)	

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MRF:psb

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Stephen W. Buckingham
3M Office of Intellectual Property Counsel
P.O. Box 33427
St. Paul, MN 55133-3427